

CLAIMS

I. CLAIM:

1. A perimeter weighted foundation subject to high upset forces, said foundation comprising:

a first upright cylindrical structure of heavy post-tensioned cementitious material under heavy compressive loading,

a second upright cylindrical structure of cementitious material spaced from said first cylindrical structure, and

a spread section of heavy post-tensioned cementitious material, said spread section interconnecting said first cylindrical structure and said second cylindrical structure.

2. A perimeter weighted foundation as claimed in claim 1, wherein said spread section is integral with said second cylindrical structure.

3. A perimeter weighted foundation as claimed in claim 1, wherein said spread section includes a depending annular shoulder on its bottom surface adjacent a bottom outside surface of said first upright cylindrical structure.

4. A perimeter weighted foundation as claimed in claim 1, wherein said spread section includes two layers of radially extending post-tensioning bolts.

5. A perimeter weighted foundation as claimed in claim 4, wherein said two layers of post-tensioning bolts extend through said first cylindrical structure.

6. A perimeter weighted foundation as claimed in claim 4, wherein one of said two layers of post-tensioning bolts extends vertically into said second cylindrical structure.

7. A perimeter weighted foundation as claimed in claim 1, wherein said first and said second cylindrical structures are each defined between two sections of corrugated metal pipe.

8. A perimeter weighted foundation as claimed in claim 7, wherein said two sections of corrugated metal pipe of said second cylindrical structure are of different height.

9. A perimeter weighted foundation as claimed in claim 7, wherein said two sections of corrugated metal pipe of said second cylindrical structure are of equal height.

10. A perimeter weighted foundation as claimed in claim 1, wherein said spread section extends between a lower portion of said first cylindrical structure and an upper portion of said second cylindrical structure.

11. A perimeter weighted foundation as claimed in claim 1, wherein said second cylindrical structure extends to a depth below said first cylindrical structure.

12. A perimeter weighted foundation as claimed in claim 1, wherein a wind tower is supported by said foundation.

13. A perimeter weighted foundation as claimed in claim 1, wherein said spread section includes at least one layer of radially extending post-tensioning bolts and a plurality of concentric circles of reinforcing tendons overlying said at least one layer of radially extending post-tensioning bolts.

14. A perimeter weighted foundation as claimed in claim 13, wherein each of said tendons includes a plurality of high strength cable wires.

15. A method of forming a foundation preparatory to mounting a structure base on said foundation, said foundation including a pedestal section and a perimeter wall section and a spread section interconnecting said pedestal section, and said perimeter wall section, said method comprising:

excavating a generally circular or polygon ground pit having outer dimensions slightly greater than dimensions of said perimeter wall section and a height approximately a height of said pedestal section,

excavating a trench generally around an outer perimeter of said ground pit, said trench having outer dimensions substantially equal to the outer dimensions of the ground pit and inner dimensions slightly less than inner dimensions of said perimeter wall section and to a depth slightly less than a height of the perimeter wall section,

pouring concrete into said trench and onto a portion of a base of the ground pit to form said perimeter wall section and said spread section,

backfilling soil on top of the perimeter wall section and the spread section after the concrete thereof has cured,

pouring concrete within the backfilled soil to form the pedestal section, and

backfilling soil within the pedestal section.

16. A method of pouring a foundation as claimed in claim 15, wherein the concrete for the perimeter wall section is poured between an inner and an outer corrugated metal pipe.

17. A method of pouring a foundation as claimed in claim 16, wherein the concrete for the pedestal section is poured between another set of inner and outer corrugated metal pipes.

18. A method of pouring a foundation as claimed in claim 15, wherein at least one layer of radially extending bolts is placed in said spread section to extend between the pedestal

section and the perimeter wall section prior to pouring of said concrete.

19. A method of pouring a foundation as claimed in claim 18, wherein a plurality of concentric circles of tendons are placed on the at least one layer of radially extending bolts.

20. A method of pouring a foundation as claimed in claim 18, wherein the at least one layer of radially extending bolts is post-tensioned after the concrete has hardened and cured.

21. A method of pouring a foundation as claimed in claim 19, wherein each of the tendons overlap at opposite ends.

22. A method of pouring a foundation as claimed in claim 15, wherein a wind tower is placed on top of the pedestal portion.

23. A perimeter weighted foundation subject to high upset forces, said foundation comprising a pier pedestal of post-compressed cementitious material and an enlarged base of post-compressed cementitious material extending outwardly from and below said pier pedestal.

24. A perimeter weighted foundation as claimed in claim 23, wherein said enlarged base includes a generally cylindrical vertical perimeter wall section having a diameter substantially

greater than said pier pedestal and a generally horizontal spread section extending radially and interconnecting said pier pedestal at its base and said perimeter wall section at its top.

25. A perimeter weighted foundation as claimed in claim 24, wherein said spread section is integral with said perimeter wall section.

26. A perimeter weighted foundation as claimed in claim 24, wherein said spread section is separated from said pedestal section by a portion of a corrugated metal pipe and separated from said perimeter wall section by a portion of another corrugated metal pipe.

27. A perimeter weighted foundation as claimed in claim 24, wherein said spread section includes two layers of radially extending post-tensioning bolts.

28. A perimeter weighted foundation as claimed in claim 27, wherein one of said two layers of post-tensioning bolts extends vertically into said perimeter wall section.

29. A perimeter weighted foundation as claimed in claim 28, wherein a plurality of concentric circles of reinforcing tendons overlie said one layer of radially extending post-tensioning bolts.

30. A perimeter weighted foundation as claimed in claim 29, wherein each of said tendons includes a plurality of high strength cable wires.

31. A perimeter weighted foundation as claimed in claim 24, wherein a wind tower is supported by said foundation.

32. A perimeter weighted foundation as claimed in claim 24, wherein said generally horizontal spread section includes a depending annular shoulder adjacent said pier pedestal base.